in. (2 mm) Sawing shall be performed within five days after the slab is placed and prior to opening to construction traffic. Joints shall be sealed in accordance with the requirements of 501.17 and 503.

502.6-CURBS:

The safety curbs shall be constructed using the same type of concrete as for the approach slab and shall be in accordance with the Plans. The finish of the curb shall be in accordance with 610.

502.7-METHOD OF MEASUREMENT:

The quantity of work done will be measured in square yards (meters) of "Portland Cement Concrete Approach Slab" complete in place and accepted; the area will be measured to the extremity of the concrete.

502.8-BASIS OF PAYMENT:

The quantity, determined as provided above, will be paid for at the contract unit price bid for the item below, which price and payment shall be full compensation for furnishing all materials including reinforcing steel, such transverse and longitudinal joints, joint filler, dowels and curbs, and all labor equipment, tools and incidentals necessary to complete the work.

502.9-PAY ITEM:

ITEM	DESCRIPTION	UNIT
502001-*	"Thickness" PORTLAND CEMENT CONCRETE APPROACH SLAB	SQUARE YARD (METER)

* Sequence Number

SECTION 503
SEALING JOINTS AND CRACKS IN CONCRETE PAVEMENT

503.1-DESCRIPTION:

This work shall consist of the cleaning and sealing of joints or cracks, or both, in concrete pavement in the manner and subject to the conditions and regulations prescribed.

503.2-MATERIALS:

For hot-poured joint sealing, the sealing material shall conform to the requirements of 708.3; sealing operations shall be as specified.

For sealing with preformed elastomeric seals, the sealing material shall conform to 708.2; requirements for installation of the seal shall be in accordance with 501.16.

CONSTRUCTION METHODS

503.3-NEW CONSTRUCTION:

On new concrete pavement construction, before opening to traffic all joints and cracks shall be cleaned to the full depth of the sawed cut or formed joint and sealed as prescribed.

503.4-MAINTENANCE:

In sealing joints and cracks in old concrete pavement, old filler and foreign material in the joints and cracks shall be removed. The joints and cracks shall then be sealed as prescribed.

503.5-PREPARATION OF MATERIAL FOR USE:

Before charging the compound into the melting unit, the unit shall be free from all foreign material. If the type of heater to be used requires that the sealing material, as shipped, be cut into smaller pieces before melting, the method used is subject to approval by the Engineer.

The heating kettle used for melting sealing materials shall be of the indirect heating or double boiler type, using oil as the heat transfer medium. It shall have a thermostatically controlled heat source, a built-in automatic agitator, and thermometers installed to indicate both the temperature of the melted sealing material and that of the oil bath. Other methods of indirect heating approved by the Engineer may be used. A positive means of controlling the temperature of the heat transfer medium at all points in the system shall be incorporated in the heater. Sealing material shall be uniformly heated until the pouring temperature recommended by the manufacturer is reached. Should the maximum pouring temperature recommended be exceeded, the material will be rejected. The material shall be poured as soon as possible after the pouring temperature is reached. Only sufficient material for the day's operation shall be heated each day.

503.6-PREPARATION OF JOINTS AND CRACKS FOR SEALING:

The joints shall be thoroughly cleaned of all loose scale, dirt, dust, other foreign matter, and loosely stuck particles of mortar and aggregate, so that sound and clean joint walls result. In new concrete pavement, joints shall be cleaned the full depth of the cut or formed opening; in old concrete pavement, the minimum depth of cleaning shall be 1 in. (25 mm), but the cleaning shall extend to a greater depth where necessary to remove loose or foreign material. This may be accomplished by use of hand tools, power tools such as rotary brushes, or by any method or combination of methods. Cracks shall be cleaned of all loose material and old sealing compound. The use of any tool which results in damage to the pavement is prohibited. Just prior to the actual sealing operation, the joint or crack shall be thoroughly blown out with an air jet having sufficient volume and pressure to remove any loose material left by the cleaning operation. Priming shall be required when resealing joints which previously contained sealing material dissimilar to the new sealing material. Priming shall be accomplished by swabbing the joint walls with naphtha, varnelene, varsol,

or other highly volatile type of solvent prior to the sealing operations. Moderate heating at relatively low temperature will be permitted to facilitate preparation of the primer.

Just prior to the actual hot-poured sealing operation for transverse contraction and construction joints, joint back-up material shall be inserted into the joint as shown on the Plans. Joint back-up material shall be either stiff, self-adhering tape or acceptable rope or rod material. Joint back-up material shall be non-metallic, inert, resilient, compressible, non-absorbent, non-shrinking material compatible with the primer and sealant. Material impregnated with oil or bitumen shall not be used. The back-up material shall provide a bond breaker to insure the sealant adheres only to the joint faces and not the bottom of the reservoir. The back-up material shall also support the sealant so that it does not otherwise sag or slide into the joint below the back-up material.

503.7-EQUIPMENT FOR APPLYING SEALER:

The equipment used for the placing of sealing material in the joints may consist of conventional hand pouring pots, individual mechanical pouring kettles mounted on wheels with a pouring shoe, or heating units from which material may be discharged into the joint through the use of flexible lines and suitable shoes. Any heat which it may be necessary to apply to sealing material after it leaves the main heating unit shall be applied by indirect and controlled methods as specified in 503.5. No direct heat will be permitted on the pouring unit in order to meet field controls set forth below. Any method of placing sealing material which results in compliance with the following requirements will be satisfactory.

503.8-PLACEMENT REQUIREMENTS:

All joints shall be filled to within ¼ in. (6 mm), with a tolerance of plus or minus 1/16 in. (2 mm), of the surface of the pavement and to the depth required; in no case shall the joints be overflowed.

In resealing joints in old concrete, sealing material shall be poured to the full depth of the cleaned joint. Any spillage of sealing material on pavement areas shall be immediately removed. If pouring shoes are used which overlap the pavement surface adjacent to the joint, the resulting strip shall be straight and neat with no excess material left on the surface of the pavement. A neat and workmanlike job will be required at all times. At no time shall sealing material be placed in a joint which is either dirty or wet. The joint shall be clean and surface dry at the time of placement. Work will be suspended when joints are wet or damp and when atmospheric temperature is below the minimum specified by the manufacturer.

503.9-METHOD OF MEASUREMENT:

The quantity of work done will be measured in linear feet of "Sealing Joints and Cracks", when the item below is included in the Contract.

503.10-BASIS OF PAYMENT:

The quantity of work, as determined above, will be paid for at the contract unit price bid for the item below, which price and payment shall be full compensation for furnishing all the materials and doing all the work prescribed in a workmanlike and acceptable manner, including all the labor, tools, equipment, supplies and incidental necessary to complete the work.

503.11-PAY ITEM:

ITEM	DESCRIPTION	UNIT
503001-*	SEALING JOINTS AND CRACKS	LINEAR FOOT (METER)
503006-*	SAW AND SEAL, HOTPOUR SEAL METHOD	LINEAR FOOT (METER)

* Sequence Number

SECTION 504
BITUMINOUS UNDERSEAL FOR CONCRETE PAVEMENT

504.1-DESCRIPTION:

This work shall consist of drilling holes in portland cement concrete pavement at the locations shown on the Plans or where directed by the Engineer, pumping bituminous material through the holes, and sealing the holes with cement grout.

504.2-MATERIALS:

The materials shall meet the requirements specified in the following Subsections of Division 700:

MATERIAL	SUBSECTION
Asphalt Cement	705.6
Portland Cement	701.1 & 701.3
*Fine Aggregate	702.1
Water	715.7

* The use of limestone sand will not be permitted.

Grout for sealing holes shall consist of one partportland cement and three parts fine aggregate, mixed to the consistency directed by the Engineer.

CONSTRUCTION METHODS

504.3-GENERAL:

Holes of 1 ½ in. (40 mm) diameter shall be drilled through the concrete pavement at the locations shown on the Plans or as directed by the Engineer.